

## ? *Campbellodus* sp. (Placodermi: Ptyctodontida) from the Upper Devonian Napier Range, Canning Basin

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Besides the well known fish fauna from the Gogo Formation of the Canning Basin (Gardiner and Miles 1975) there have been few vertebrates from other formations making up the Upper Devonian reef complex (Playford and Lowry 1967). The specimen described here was collected in the early 1940s by Dr Curt Teichert, and was prepared using acetic acid. Only two species of ptyctodontids have previously been described from Australia, both from the Lower Frasnian Gogo Formation, Western Australia (Miles and Young 1977), although indeterminate toothplates have also been reported from the Early Devonian Murrumbidgee Group of New South Wales (Ørvig 1969).

### Systematics

Subclass Placodermi

Order Ptyctodontida

? *Campbellodus* Miles and Young, 1977

### Remarks

The new specimen (UWA Geology Museum No. 26566, Figure 1) is provisionally referred to this genus because it shares the same overall proportions with a well developed dorsal process and broad tritural surface. Although Miles and Young did not characterise the genus by its toothplates, which they claimed could be placed in either *Ptyctodus* or *Rhynchodus*, it is assumed that the close resemblance in shape and tritural surface shown by UWA 26566 and *Campbellodus decipiens* (Figure 2) suggests that the specimen tentatively be assigned to *Campbellodus*. It closely resembles one of the figured upper jaw toothplates of *C. decipiens* (Miles and Young 1977, plate 1-A), and differs from other ptyctodontid toothplates with dorsal processes (e.g. *Rhynchodus* spp., Denison 1978). Miles and Young (1977, p. 150) commented on this particular upper jaw toothplate of *C. decipiens* (P50907) as follows "to our knowledge this specimen does not closely resemble any previously described ptyctodontid toothplate". A new specimen of *C. decipiens* found in 1986 (but lacking toothplates) conforms to the same size range of the other two specimens of this species, indicating an estimated size for the upper jaw toothplates of up to 50 mm, somewhat smaller than the Napier Range specimen (length 65 mm).

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### Locality and horizon

From the north-eastern side of the Napier Range, near Fitzroy Crossing, from Teichert's locality 100 (close to Trigg point 73), Upper Frasnian section of the Napier Formation (Dr P. Playford, pers. comm.).

### Description

The main features of the specimen can be clearly seen from Figure 1, with a comparison of upper toothplates of the other Australian ptyctodontids from the Late Devonian shown in Figure 2. The mesial surface of the toothplate (Figure 1-A) has a strongly convex dorsal margin which ends posteriorly at a blunt posterior

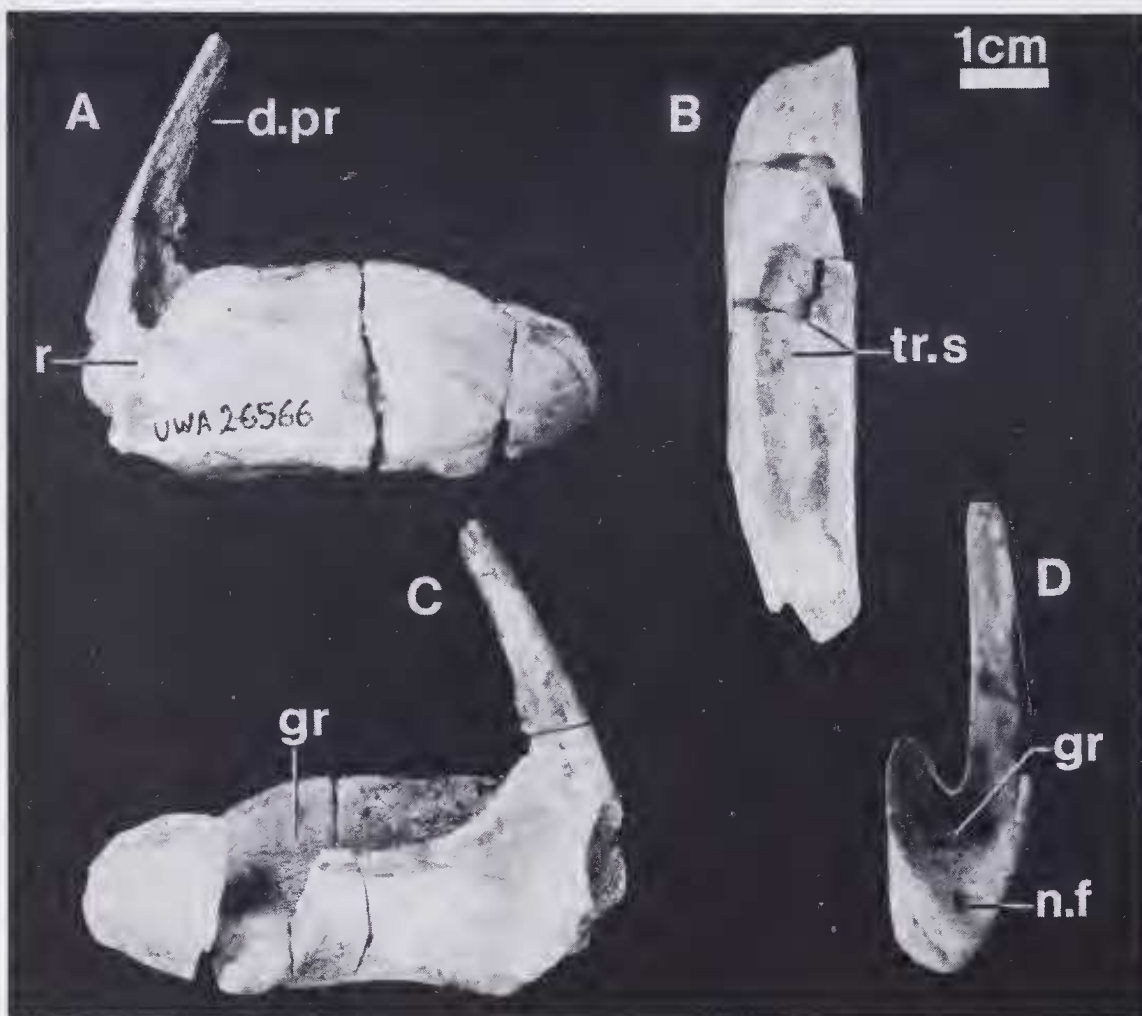


Figure 1 *?Campbellodus* sp., Upper Devonian, Napier Formation, Western Australia. UWA 26566, in (A) mesial, (B) ventral, (C) lateral and (D) posterior views. d.pr, anterior dorsal process; gr, dorsal groove; n.f. posterior nutritive foramen, r, ridge; tr.s, tritural surface.

point. There is a short posteroventral margin before the biting surface (tr.s, Figure 1-B) starts at the ventral margin. The high dorsal process (d.pr Figure 1-A) meets the mesial lamella of the toothplate along a shallow groove which is bordered posteromesially by a steeply inclined ridge (r, Figure 1-A). In lateral view (Figure 1-C) the deeply excavated dorsal groove (gr) can be seen. The dorsal process joins the lateral lamella of the toothplate by evenly expanding ventrally, rather than by a sharp junction as in *C. decipiens* (Figure 2-B). The lateral lamella is lower than the mesial lamella, and both are quite flat, becoming weakly depressed near their centre. In posterior view (Figure 1-D) the rear of the dorsal groove has a small foramen for vascular supply to the toothplate tissues (n.f).

The tritural surface (Figure 1-B) has a well developed ridge along its antero-mesial edge which twists to face the opposite side posteriorly.

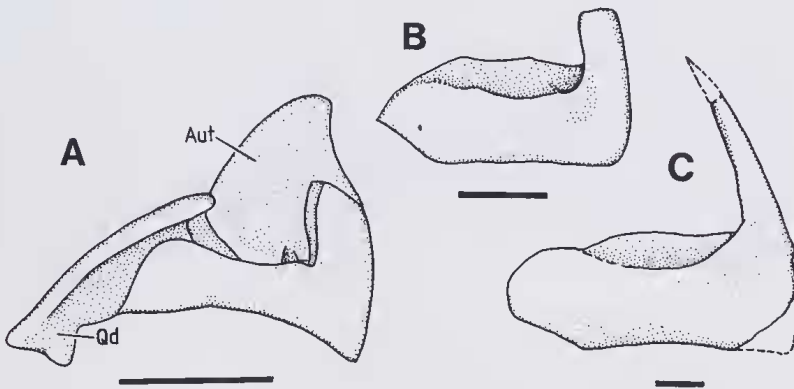


Figure 2 Comparison of Upper Devonian ptyctodontid upper jaw toothplates from Australia. A, *Ctenurella gardineri* Miles and Young, 1977, showing quadrate (Qd) and autopalatine (Aut). B, *Campbellodus decipiens* Miles and Young, 1977. C, ?*Campbellodus* sp., Napier Fm. Bar scale equals one centimetre.

### Discussion

The large size of the toothplate places the specimen in the middle size range for ptyctodontids. The largest forms, (*Palaeomylus greeni*, *P. frangens* and *P. hussakofi*; Middle Devonian, USA), have toothplates 14-15 cm long (Denison 1978). Apart from the Gogo species other Late Devonian ptyctodontids from Gondwana (*sensu* Young 1981) are known from isolated toothplates of "*Ptyctodus*" and "*Rhynchodus*" kinds from Iran (LeLievre *et al.* 1981). Although the "*Rhynchodus*" toothplates have no close resemblance to *Campbellodus* the lower jaw element figured as a "*Ptyctodus*" is quite similar to the figured lower toothplate of *C. decipiens* (Miles and Young 1977, plate 1 D, E). The upper toothplates of *Ptyctodopsis menzeli* are similar to those of *Campbellodus* in overall shape and tritural surface but differ in the shorter height of the anterior dorsal process. As the

anterior ends of the toothplates in *Ptyctodopsis* are not known these resemblances must be regarded as superficial. *Ptyctodopsis* is markedly different from *Campbellodus* in its trunk armour (Denison 1985). Also new material of *C. decipiens*, WAM 86.9.772, shows that it has two median dorsal plates and a high dorsal spine (Long 1987). Denison (1985) considered the tritural type of dentition as a specialisation. *Campbellodus*, however, is regarded as a more primitive form than *Ctenurella* because it retains spinal plates. The Napier Range specimen appears more derived than *C. decipiens* in its larger size and higher development of the anterior dorsal process. It represents one of two known vertebrates from the Napier Formation, the other being pieces of tuberculated arthrodire bone described originally as a stromatoporoid, *Stromatoporella kimberleyensis* (see Cockbain 1976).

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